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SUMMARY

An unhealthy lifestyle among employees has a major financial impact on organizations in terms of productivity loss and sickness absence rates. Additionally, the prevalence of an unhealthy lifestyle among the Dutch population is high. Therefore, numerous worksite health promotion programs (WHPP's) have been developed and studied intensively on their effectiveness over the past two decades. However, implementation of WHPP's in daily practice has been limited. Partly because of the lack of high quality process or formative evaluations that may improve our understanding of factors that can contribute to the implementation process of such programs. Hence, the focus of this dissertation was to systematically evaluate the implementation process and to gain insight into implementation factors that contribute to the adoption and uptake of a WHPP in practice. A specific focus was put on the use of an already existing 7-step implementation strategy by two participating worksites of different organizations as a means to improve the quality of the implementation and effectiveness of a WHPP. The 7-step implementation strategy was aimed to ensure the: 1) creation of solid support, 2) formation of a project structure, 3) performance of a needs assessment, 4) development of tailored evidence-based interventions, 5) adequate implementation of WHPP interventions, 6) evaluation of the intervention, and 7) the maintenance of the intervention.

The two main objectives of this thesis were:

- 1) To identify implementation determinants (i.e. barriers and facilitators) that either hamper or facilitate the implementation of WHPP's focusing on healthy lifestyle changes, and;
- 2) To assess whether the use of the 7-step strategy contributed to the successful development, implementation and maintenance of a WHPP aimed at stimulating a healthy lifestyle change among employees.

In order to answer these objectives, we proposed a new conceptual framework for conducting a formative evaluation in **Chapter 2**. In this chapter we outlined how this framework was used for the evaluation of the use of the 7-step strategy in this study and a detailed description of the background and content of the 7-step strategy was provided. The proposed conceptual framework was developed based on literature on process evaluations. The final framework as applied in this thesis consisted of eight components: 1) context, 2)

recruitment, 3) reach, 4) dose delivered, 5) dose received, 6) fidelity, 7) satisfaction and 8) maintenance. Each of these component measure a different aspect of the adoption, implementation and continuation of a WHP program. An advantage of the proposed framework is that it takes into account which factors could positively or negatively influence the implementation process. Another plus is that for each component different levels on which the component can act were described, which included the organizational level, implementer level and employee level.

Chapter 3 contains a systematic review that summarizes and critically appraises the quality of studies that conducted an effect evaluation as well as a process evaluation for worksite health promotion programs focusing on healthy lifestyle changes and measured implementation determinants. The main results were that, of the 307 identified effect evaluations, 22 (7.2%) published an additional process evaluation. Only eight of these studies based their process evaluation on a theoretical framework. The operationalization of process components varied between studies. Mostly due to the fact that different or no frameworks were used to guide the evaluation. The most frequently reported process components were dose delivered and dose received. Over 50 different implementation determinants were identified. The most frequently reported facilitator for implementation was strong management support. Lack of resources was the most frequently reported barrier. Seven studies examined the link between implementation and program effectiveness. In general higher levels of implementation favorably affect study outcomes (i.e., effectiveness).

In **Chapter 4** we evaluated the implementation of multiple lifestyle interventions at the two worksites (i.e. hospital and university) by 1) studying the extent and quality of program delivery and maintenance, and 2) looking at employee recruitment, reach, participation and satisfaction levels. Additionally we evaluated the effectiveness of the interventions in a quasi-experimental controlled trial. A combination of quantitative and qualitative methods were used. Results showed that the WHPP's were implemented partly as planned. 84.9% of the planned interventions were delivered, but these were in general relatively simple and easily implemented interventions which did not require active employee participation (such as distribution of free fruit and posters). Most interventions chosen were environmental changes and educational interventions that could be implemented easily at low costs and effort. Employees showed high reach (96.6%) and overall participation (75.1% participated in at least one intervention). Overall employees were moderately satisfied with the interventions (6.8 ± 1.1), mainly because they perceived the programme to be a good initiative which showed that their employer acknowledged the value of employee health

and lifestyles. Additionally, most interventions were perceived by the employees to be “pragmatic” and thought to facilitate employees in obtaining a healthy lifestyle. On a more critical note, the long interval between some interventions reduced employee’s interest in the project. The effect evaluation showed a significant intervention effect for days of fruit consumption (β : 0.44 days/week, 95%CI 0.02 to 0.85).

In **Chapter 5**, we explored which implementation determinants were associated with employee participation and satisfaction levels. Thirteen implementation determinants derived from literature were measured during (T1) and after (T2) implementation of the WHPP using a questionnaire. Using linear and logistic regression analyses we found that a positive attitude towards program implementation at T1 (OR 2.06) was best associated with high participation at T2. The ‘programs match with employee’s needs’ (β : 0.22), ‘positive attitude towards program implementation’ (β : 0.42), and ‘positive attitude towards employer involvement’ (β : 0.20) at T1 was associated best with overall satisfaction at T2. Whereas the ‘programs fit with the organization’ (β : 0.27), ‘positive attitude towards program implementation’ (β : 0.32), ‘positive program image’ (β : 0.24), and ‘program notification to new employees’ (β : 0.13) at T2 were best associated with higher overall satisfaction levels. So in order too potentially increase the success of a program, implementers should ensure that the program fits employees needs and that employees have a favourable attitude towards program implementation.

Chapter 6 presented the actual use and adherence of both worksites to the 7-step strategy. Strategy adherence was assessed with twelve performance indicators (PIs) that reflect the use of the 7-step strategy. Scores on each PI were calculated based on the data collected by onsite monitoring and the semi-structured interviews at baseline and follow-up (6, 12 and 18 months). We calculated an overall performance indicator for the whole strategy based on the average of all individual PIs, for which a higher overall performance score corresponded with higher strategy adherence. The overall performance indicator for the University was 0.76 and for the Hospital 0.54 both representing partial strategy adherence. Overall, lowest scores were found for creating support among middle and lower management, formation of project structure, performing a needs assessment, develop a project plan, and maintenance. The results indicated that strategy adherence facilitated a structured development and implementation. When improvements (as described in chapter 7) will be made to the content and performance of the 7-step strategy, it could be an effective tool to successfully implement a multi-component WHPP.

Chapter 7, the general discussion, starts with presenting the main findings in the light of the objectives of this thesis, and is followed by the methodological contributions and issues that should be acknowledged when interpreting the findings. An improved 7-step strategy is presented based on the lessons learned in this thesis. Recommendations and implications for future researchers and practitioners are also addressed in this chapter. Overall, this thesis showed that although the use of the 7-step strategy helps overcome implementation determinants, the strategy only partly led to the successful development, implementation and maintenance of a WHPP. The strategy was not able to induce the implementation and maintenance of more comprehensive evidence-based interventions in the current form. The findings as described in this thesis make clear that, although the 7-step strategy was perceived as a useful tool to systematically implement lifestyle interventions in an organization, improvements need to be added before nationwide use can be recommended. For example, the strategy should contain more (practical) materials to substantiate each step. In order to manage expectations, the strategy can be optimized by specifying a timeline for successful execution of each step. As is, the strategy does not account for all possible implementation determinants. A specific questionnaire addressing these determinants for project members can help to anticipate and steer on possible barriers in the implementation. Finally, the strategy should have a bigger focus on repeating the steps to make sure that the policy and interventions are still up to date and that vitality is an ongoing topic which should be addressed regularly. Specific improvements to each of the seven steps are also described in Chapter 7.